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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,049	12/20/2001	Jonathan D. Bright	0036-011	5774

40972 7590 06/16/2005

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EXAMINER

REILLY, SEAN M

ART UNIT	PAPER NUMBER
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2153

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,049

Applicant(s)

BRIGHT ET AL.

Examiner

Sean Reilly

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-135 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27, 32, 35-74, 79, 82-115, 121-135 is/are rejected.
- 7) ☒ Claim(s) 28-31, 33, 34, 75-78, 80, 81 and 116-120 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This office action is a first action on the merits of this application. Applicant's response to the election requirement on 3/10/05 was received and accordingly amended claims 1-135 are presented for further examination.

Priority

1. No claim for priority was made.
2. Accordingly the effective filing date for the subject matter defined in the pending claims in this application is 12/20/01.

Information Disclosure Statement

3. No information disclosure statement was submitted from Applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-16, 19-27, 32, 35-63, 66-74, 79, 82-104, 107-115, and 121-135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moulton et al. (U.S. Patent Number 6,826,711; hereinafter Moulton) and Miloushev et al. (U.S. Patent Number 6,889,249; hereinafter Miloushev).

5. With regard to claims 1, 3, Moulton disclosed a data storage method comprising:
- receiving a data set from a client (Col 12, lines 13-20);
 - defining a virtual device to include device portions on a plurality of network servers (Col 8, lines 26-29);
 - writing each of said data portions to a corresponding one of said device portions (Col 8, lines 63-67);

Although Moulton disclosed storing the data in portions on a plurality of network servers (Col 8, lines 36-41), Moulton failed to specifically recite parsing said data set into a plurality of data portions. In an analogous art, Miloushev disclosed a similar distributed network storage system where received data is parsed into a plurality of data portions (Miloushev, Aggregation with Metadata file Col 19, lines 15-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Miloushev within Moulton's system, since a rule-based aggregation storage system allows a storage administrator to specify different ways of aggregation for different sets and/or types of files, thereby easily tuning the characteristics of the system to the intended use and the specific access patterns for different data (Miloushev Col 19, lines 39-44).

6. With regard to claims 2 and 46-47, Moulton disclosed said data set is received from said client via a first network; and said data portions are written to said device portions via a second network (Moulton Col 5, lines 48-55).

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7. With regard to claims 4-7, Miloushev disclosed no more than one user data file, directory (Miloushev Col 6, lines 45-49), metafile, or type of data is written to each of said virtual devices (Each user file is aggregated and stored separately; Miloushev Col 6, line 57—Col 7, line 22).

8. With regard to claims 8 and 39, Moulton disclosed incorporating said virtual device into a data structure distributed across said plurality of network servers (Col 12, lines 40-52).

9. With regard to claims 9 and 10, Miloushev disclosed the system similarly performs directory parsing and distribution as the system does to files thus the claims are rejected using a similar rationale (Col 6, lines 45-47, for detailed directory discussion refer to Col 25, line 65 – Col 26, line 63).

10. With regard to claim 11, Moulton disclosed step of defining said virtual device comprises: determining the number of data portions into which said data set is to be parsed; selecting a number of servers from said plurality of servers corresponding to said number of data portions; and defining a data portion file for each selected server to store a corresponding one of said data portions (Moulton Col 8, lines 51-67).

11. With regard to claim 12, Miloushev disclosed said number of data portions depends on the type of data in said data set (Miloushev Col 19, lines 40-44).

12. With regard to claim 13, Miloushev disclosed each said data portion file is assigned a name, said name including: an identifier uniquely identifying said virtual device; a file number uniquely identifying said data portion file with respect to other data portion files corresponding to said virtual device; and the total number of said data portion files corresponding to said virtual device (Metadata information Miloushev Figure 8).

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13. With regard to claim 14, Moulton disclosed said step of defining said virtual device includes defining one of said device portions to include parity data; and said step of parsing said data includes generating said parity data (Moulton Col 8, lines 51-67).

14. With regard to claim 15, Miloushev disclosed said step of selecting a number of servers from said plurality of servers includes selecting said servers based at least in part on the available storage capacity of said servers (Miloushev Col 28, lines 10-35).

15. With regard to claims 16 and 23, Miloushev disclosed writing each of said data portions to a corresponding one of said device portions includes transmitting each of said data portions to a corresponding one of said network servers as a corresponding one of said data portion files (commit is automatic) (Miloushev Col 11, lines 4-9).

16. With regard to claims 19 and 20, Miloushev disclosed transmitting a signal to said client indicating that said data has been stored, said signal being transmitted at one of the following times depending on a predetermined criteria (e.g. positive acknowledgment that data has been stored): after said data set has been received, but before said data set has been written to said virtual device; after said data set has been written to local non-volatile memory, but before said data set has been written to said virtual device; or only after said data set has been written to said virtual device (Col 11, lines 12-20).

17. With regard to claims 21-22, Moulton and Miloushev fail to specifically recite the predetermined criteria includes a data type of said data set. Nevertheless it was well known in the art to send storage confirmation signals at various times based on the sensitivity/importance of the data (determined by file type). Thus, it would have been advantageous to one of ordinary skill in the art at the time of the invention to modify the combined Moulton and Miloushev

system to send storage confirmation signals to clients based on the type of file stored, so that clients can ensure sensitive files are properly stored.

18. With regard to claims 24-27, the combined system teaches determining whether a confirmation signal has been received from each of said corresponding network servers, said confirmation signals indicating that said network servers have committed said data portions to memory (Miloushev Col 11, 13-15); and writing a write failure entry to at least one fact server, said write failure entry identifying any of said corresponding network servers from which said confirmation signals are not received (Moulton Col 13, lines 1-19).

19. With regard to claims 32 and 35, Moulton disclosed said step of receiving said data set from said client comprises: writing said data set to local nonvolatile data storage (e.g. disk); and writing a local data entry to a fact server (state information Col 12, lines 40-52), said local data entry indicating that valid data is stored in said local nonvolatile data storage (Col 13, lines 1-19).

20. With regard to claim 36, Miloushev disclosed a data retrieval method comprising receiving a data request from a client retrieving data portion files from said device portions and collating said retrieved data portion files to generate the requested data; and transmitting the requested data to said client (Miloushev Col 8, lines 36-41).

21. With regard to claim 37, Miloushev disclosed said step of retrieving said virtual device definition comprises: retrieving virtual meta-data device information from a current directory; retrieving meta-data portion files from said plurality of network servers; collating said meta-data portion files to generate meta-data; and retrieving said virtual device definition from said meta-data (Col 33, lines 64 – Col 34 line 9).

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22. With regard to claim 38, Miloushev disclosed said step of retrieving data portion files from said device portions comprises: transmitting requests for said data portion files to network servers corresponding to said device portions; and receiving said data portion files from said network servers (Col 34, lines 21-31).

23. With regard to claims 40-42, Miloushev disclosed said step of retrieving data portion files from said device portions comprises: determining which one of a plurality of controllers has access (where the file is located from the metadata) to said virtual device, said controllers residing on said network servers; and invoking said controller with access to said virtual device to retrieve said data portion files (retrieving the file) (Col 33, lines 64 – Col 34 line 9).

24. With regard to claim 43, Moulton disclosed said step of receiving said data portion files from said network servers includes receiving all but one of said data portion files; and said step of collating said data portion files includes generating said one data portion file based on parity data included in said received data portion files (Col 11, lines 52-65).

25. With regard to claim 44, Moulton disclosed polling at least one fact server to determine whether said virtual device includes a potentially corrupt data portion file; and reconstructing said potentially corrupt data portion file (Col 13, lines 19).

26. With regard to claim 45, Moulton disclosed polling at least one fact server to determine whether said virtual device includes a potentially corrupt data portion file (Col 13, lines 1-19); polling at least one fact server to determine whether said requested data is stored in nonvolatile data storage (state information, Col 12, lines 40-52); and retrieving said requested data from said nonvolatile data storage instead of said virtual device, if said virtual device includes a potentially

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corrupt data portion file and said requested data is stored in said nonvolatile data storage (Col 11, lines 52-65).

27. Claims 47-63, 66-74, 79, 82-104, 107-115, and 121-135, are substantially the same as the above mapped claims, thus they are rejected using a similar rationale.

28. Claims 17-18, 64-65 and 105-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moulton et al. (U.S. Patent Number 6,826,711; hereinafter Moulton) and Miloushev et al. (U.S. Patent Number 6,889,249; hereinafter Miloushev) as applied above and further in view of Utter et al. (U.S. Patent Number 5,815,649; hereinafter Utter).

29. With regard to claims 17-18, 64-65 and 105-106, Moulton and Miloushev both fail to specifically recite transmitting a signal to said client indicating that said data set has been stored, after said data set has been received, but *before* said data set has been written to said virtual device. Nevertheless, it was well known in the art at the time of the invention to transmit an storage acknowledgement prior to completing the store operation, as evidenced by Utter. In an analogous art, Utter disclosed a distributed data storage system where client storage acknowledgements are sent prior to actually storing the content (write back) (Col 13, lines 15-37). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined system of Moulton and Miloushev to send client storage acknowledgements prior to actually storing the content within the system, as disclosed by Utter, in order to reduce client side system I/O latency.

Allowable Subject Matter

Claims 28-31, 33-34, 75-78, 80-81, and 116-120 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

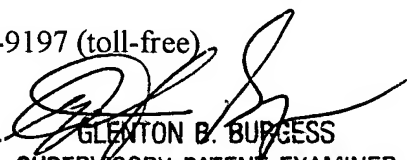
Conclusion

30. The prior art made of record, in PTO-892 form, and not relied upon is considered pertinent to applicant's disclosure.
31. This office action is made **NON-FINAL**.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Reilly whose telephone number is 571-272-4228. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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